

PATENT COOPERATION TREATY

PCT

INTERNATIONAL PRELIMINARY REPORT ON PATENTABILITY


(Chapter II of the Patent Cooperation Treaty)

(PCT Article 36 and Rule 70)

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Applicant's or agent's file reference BW337M		FOR FURTHER ACTION		See Form PCT/IPEA/416
International application No. PCT/IT2004/000351		International filing date (day/month/year) 18.06.2004	Priority date (day/month/year) 20.06.2003	
International Patent Classification (IPC) or national classification and IPC A43B7/12, A43B23/02, A43B23/06, A43D11/00, A43D3/02, A43D3/04				
Applicant NEXTEC S.R.L. et Al.				
<p>1. This report is the international preliminary examination report, established by this International Preliminary Examining Authority under Article 35 and transmitted to the applicant according to Article 36.</p> <p>2. This REPORT consists of a total of 7 sheets, including this cover sheet.</p> <p>3. This report is also accompanied by ANNEXES, comprising:</p> <p>a. <input checked="" type="checkbox"/> sent to the applicant and to the International Bureau a total of 6 sheets, as follows:</p> <p><input checked="" type="checkbox"/> sheets of the description, claims and/or drawings which have been amended and are the basis of this report and/or sheets containing rectifications authorized by this Authority (see Rule 70.16 and Section 607 of the Administrative Instructions).</p> <p><input type="checkbox"/> sheets which supersede earlier sheets, but which this Authority considers contain an amendment that goes beyond the disclosure in the international application as filed, as indicated in item 4 of Box No. I and the Supplemental Box.</p> <p>b. <input type="checkbox"/> (sent to the International Bureau only) a total of (indicate type and number of electronic carrier(s)) , containing a sequence listing and/or tables related thereto, in computer readable form only, as indicated in the Supplemental Box Relating to Sequence Listing (see Section 802 of the Administrative Instructions).</p>				
<p>4. This report contains indications relating to the following items:</p> <p><input checked="" type="checkbox"/> Box No. I Basis of the opinion</p> <p><input type="checkbox"/> Box No. II Priority</p> <p><input type="checkbox"/> Box No. III Non-establishment of opinion with regard to novelty, inventive step and industrial applicability</p> <p><input type="checkbox"/> Box No. IV Lack of unity of invention</p> <p><input checked="" type="checkbox"/> Box No. V Reasoned statement under Article 35(2) with regard to novelty, inventive step or industrial applicability; citations and explanations supporting such statement</p> <p><input type="checkbox"/> Box No. VI Certain documents cited</p> <p><input type="checkbox"/> Box No. VII Certain defects in the international application</p> <p><input type="checkbox"/> Box No. VIII Certain observations on the international application</p>				
Date of submission of the demand 05.04.2005		Date of completion of this report 23.09.2005		
Name and mailing address of the international preliminary examining authority:  European Patent Office - P.B. 5818 Patentlaan 2 NL-2280 HV Rijswijk - Pays Bas Tel. +31 70 340 - 2040 Tx: 31 651 epo nl Fax: +31 70 340 - 3016		Authorized Officer Cianci, S Telephone No. +31 70 340-4655		



**INTERNATIONAL PRELIMINARY REPORT
ON PATENTABILITY**

International application No.
PCT/IT2004/000351

Box No. I Basis of the report

1. With regard to the **language**, this report is based on the international application in the language in which it was filed, unless otherwise indicated under this item.
- ☐ This report is based on translations from the original language into the following language , which is the language of a translation furnished for the purposes of:
- ☐ international search (under Rules 12.3 and 23.1(b))
 - ☐ publication of the international application (under Rule 12.4)
 - ☐ international preliminary examination (under Rules 55.2 and/or 55.3)
2. With regard to the **elements*** of the international application, this report is based on *(replacement sheets which have been furnished to the receiving Office in response to an invitation under Article 14 are referred to in this report as "originally filed" and are not annexed to this report)*:

Description, Pages

1-7 as originally filed

Claims, Numbers

1-48 received on 12.07.2005 with letter of 06.07.2005

Drawings, Sheets

1/3-3/3 as originally filed

- ☐ a sequence listing and/or any related table(s) - see Supplemental Box Relating to Sequence Listing

3. ☐ The amendments have resulted in the cancellation of:

- ☐ the description, pages
- ☐ the claims, Nos.
- ☐ the drawings, sheets/figs
- ☐ the sequence listing (*specify*):
- ☐ any table(s) related to sequence listing (*specify*):

4. ☐ This report has been established as if (some of) the amendments annexed to this report and listed below had not been made, since they have been considered to go beyond the disclosure as filed, as indicated in the Supplemental Box (Rule 70.2(c)).

- ☐ the description, pages
- ☐ the claims, Nos.
- ☐ the drawings, sheets/figs
- ☐ the sequence listing (*specify*):
- ☐ any table(s) related to sequence listing (*specify*):

* If item 4 applies, some or all of these sheets may be marked "superseded."

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Box No. V Reasoned statement under Article 35(2) with regard to novelty, inventive step or industrial applicability; citations and explanations supporting such statement

1. Statement

Novelty (N)	Yes: Claims	1-48
	No: Claims	
Inventive step (IS)	Yes: Claims	1-48
	No: Claims	
Industrial applicability (IA)	Yes: Claims	1-48
	No: Claims	

2. Citations and explanations (Rule 70.7):

see separate sheet

Re Item V

**Reasoned statement with regard to novelty, inventive step or industrial applicability;
citations and explanations supporting such statement**

- 1 The following documents are referred to in this communication:
- D1: WO 02/11571 A (BOTTINI EMILIO ; MORLACCHI LUCA (IT); NEXTEC S R L (IT)) 14 February 2002 (2002-02-14)
 - D2: US-A-5 253 434 (BEMIS JON L ET AL) 19 October 1993 (1993-10-19)
 - D3: GB-A-2 290 455 (NORTH & SONS LTD JAMES) 3 January 1996 (1996-01-03)
 - D4: DE 100 31 827 C (HELIX SCHUHFABRIK GMBH & CO) 17 January 2002 (2002-01-17)
 - D5: US-A-5 685 091 (YALAMANCHILI SESHAMAMBA) 11 November 1997 (1997-11-11)

2 INDEPENDENT CLAIM 1

- 2.1 The document D1 is regarded as being the closest prior art to the subject-matter of claim 1, and discloses (the references in parentheses applying to this document) a process for waterproofing semimanufactured footwear, clothing items and accessories, said semimanufactured product having a three-dimensional conformation with at least one inner surface and one outer surface, said process comprising the following operative steps:
- arranging the semimanufactured product onto a shaped support (8) with at least one waterproofing sheath (5,5 see fig. 5) shaped for entirely or partially cover the surfaces to be waterproofed of the semimanufactured product, at least one glue layer being arranged between these surfaces and the waterproofing sheath (5,5);
 - pressing between two deformable plates (12,12 see fig. 6-7) the semimanufactured product provided with the waterproofing sheath (5,5) and arranged on the shaped support (8).

From this, the subject-matter of independent claim 1 differs in that :

- the waterproofing sheath comprises at least one piece of semi-permeable membrane which is cut to the size of the inner surface of the semimanufactured product and is folded so as to superimpose two edges which are welded before the pressing so as to form at least one strip and give to the waterproofing sheath a three-dimensional conformation similar to the semimanufactured product arranged on the shaped support.

2.2 The subject-matter of claim 1 is therefore novel (Article 33(2) PCT).

The problem to be solved by the present invention may be regarded as reducing costs and time of waterproofing of semimanufactured products.

2.3 The solution to this problem proposed in claim 1 of the present application is considered as involving an inventive step (Article 33(3) PCT) for the following reasons:

D2 discloses a process for waterproofing an article, by providing a pattern and assembling the cut pieces into a liner by the formation of seams along the periphery of the pieces; the liner is slipped onto a shaped support where the seams are waterproofed by application of a sealant; after curing of the sealant the liner is removed from the last and incorporated into a footwear;

D3 discloses a waterproof breathable heat-resistant glove multi layered construction, whereby the breathable membrane is fixed to a lining through an interposed adhesive film which is activated in an oven;

D4 describes a pressing hot device to adhesively seal the lower edges of a multi layered breathable waterproof upper construction;

D5 discloses a method for waterproofing at least the lower region of a shoe by introducing a two component polyurethane material into the interior region of the shoe; none of the documents of the prior art discloses or suggests any of the characterizing features of claim 1.

2.4 Claims 2-12 are dependent on claim 1 and as such also meet the requirements of the PCT with respect to novelty and inventive step.

3 INDEPENDENT CLAIM 17

- 3.1 Document D1, which is considered to represent the most relevant state of the art, discloses (the references in parenthesis applying to this document): a machine for waterproofing semimanufactured products, which is provided with a pressing device (see fig. 5-8) having at least one pair of deformable plates (10) comprising a hollow body, the pressing surface of which is elastic and suitable for being urged outwards by a fluid under pressure (see description, p. 5 l. 8-30).

From this, the subject-matter of independent claim 17 differs in that: at least one of said deformable plates is fixed in a mobile manner to a support structure for opening or closing the pressing device around at least one shaped support which is provided with transport means to and from said pressing device and is suitable for supporting said semimanufactured product during the pressing with at least one waterproofing sheath.

- 3.2 The subject-matter of claim 17 is therefore novel (Article 33(2) PCT).
The problem to be solved by the present invention may be regarded as reducing costs and time of waterproofing of semimanufactured products.
- 3.3 The solution to this problem proposed in claim 17 of the present application is considered as involving an inventive step (Article 33(3) PCT) for the following reasons:
D3 discloses a waterproof breathable heat-resistant glove multi layered construction, whereby the breathable membrane is fixed to a lining through an interposed adhesive film which is activated in an oven;
D4 describes a pressing hot device to adhesively seal the lower edges of a multi layered breathable waterproof upper construction;
D5 discloses a method for waterproofing at least the lower region of a shoe by introducing a two component polyurethane material into the interior region of the shoe; none of the documents of the prior art discloses or suggests any of the characterizing features of claim 17.
- 3.4 Claims 18-44 are dependent on claim 17 and as such also meet the requirements of the PCT with respect to novelty and inventive step.

**INTERNATIONAL PRELIMINARY
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(SEPARATE SHEET)**

International application No.

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4 INDEPENDENT CLAIMS 13-16, 45-48

- 4.1** Independent claims 13-16 and 45-48 meet the requirements of the PCT in respect of novelty and inventive step (Article 33(2) and (3) PCT).

CLAIMS

1. Process for waterproofing semimanufactured footwear, clothing items and accessories, said semimanufactured product having a three-dimensional conformation with at least one inner surface and one outer surface, characterized in that it comprises said process comprising the following operative steps:
- arranging the semimanufactured product onto a shaped support (14; 27, 28; 30, 31) with at least one waterproofing sheath (18) shaped for entirely or partially cover the surfaces to be waterproofed of the semimanufactured product, at least one glue layer being arranged between these surfaces and the waterproofing sheath (18);
 - pressing between two deformable plates (2, 2') the semimanufactured product provided with the waterproofing sheath (18) and arranged on the shaped support (14; 27, 28; 30, 31), characterized in that
 - the waterproofing sheath (18) comprises at least one piece of semi-permeable membrane which is cut with the size of the inner surface of the semimanufactured product and is folded so as to superimpose two edges which are welded before the pressing so as to form at least one strip (25) and give to the waterproofing sheath (18) a three-dimensional conformation similar to the semimanufactured product arranged on the shaped support (14; 27, 28; 30, 31).
2. Process according to the previous claim, characterized in that said glue is thermoactivable and is heated during the pressing so that the waterproofing sheath (18) is joined to the semimanufactured product.
3. Process according to one of the previous claims, characterized in that the semimanufactured product is turned inside out before it is arranged on the shaped support (14; 27, 28; 30, 31) so that its outer surface is turned toward the shaped support (14; 27, 28; 30, 31) and its inner surface is turned toward the waterproofing sheath (18).
4. Process according to one of the previous claims, characterized in that the shaped support (14; 27, 28) is expanded before the pressing.
5. Process according to one of the previous claims, characterized in that the outer surface of the shaped support (14; 27, 28; 30, 31) is provided with at least one elastic, antiadherent and heat-resistant coating.

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6. Process according to one of the previous claims, characterized in that the outer surface of the shaped support (14; 27, 28; 30, 31) is shaped so as to adhere to the surfaces of the semimanufactured product which are turned toward the shaped support (14; 27, 28; 30, 31) during the pressing and to compensate their irregularities, if any.

5 7. Process according to one of the previous claims, characterized in that the glue is distributed onto the waterproofing sheath (18) before the latter is coupled with the semimanufactured product.

8. Process according to claim 7, characterized in that the glue is distributed onto the waterproofing sheath (18) in a discontinuous manner, in particular as a glue
10 pattern.

9. Process according to one of the previous claims, characterized in that the waterproofing sheath (18) comprises at least one membrane made of a semi-permeable material.

10. Process according to claim 9, characterized in that said semi-permeable
15 membrane is non-porous and carries out the passage of the water vapor by osmosis.

11. Process according to claim 9 or 10, characterized in that the waterproofing sheath (18) comprises an elastic fabric coupled with said semi-permeable membrane.

~~12. Process according to one of claims 9 to 11, characterized in that the~~
20 ~~waterproofing sheath (18) comprises at least one piece of semi-permeable membrane which is cut with the size of the inner surface of the semimanufactured product and is folded so as to superimpose two edges which are welded before the pressing so as to form at least one strip (25) and give to the waterproofing sheath (18) a three-dimensional conformation similar to the semimanufactured product arranged on the~~
25 ~~shaped support (14; 27, 28; 30, 31).~~

12. Process according to ~~claim 12~~ **one of the previous claims**, characterized in that a waterproofing tape is applied astride said strip (25) after the pressing.

~~14.~~13. Semimanufactured footwear, clothing item or accessory, characterized in that it is waterproofed by means of the process according to one of the previous claims.

30 ~~15.~~14. Footwear upper, characterized in that it is waterproofed by means of the process according to one of claims 1 to 123.

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~~16.15.~~ Shoe, characterized in that it comprises an upper according to claim 145.

~~17.16.~~ Glove, characterized in that it is waterproofed by means of the process according to one of claims 1 to 123.

~~18.17.~~ Machine for waterproofing semimanufactured footwear, clothing items and accessories, which is provided with a pressing device (1) having at least one pair of deformable plates (2, 2') comprising a hollow body, the pressing surface (3) of which is elastic and suitable for being urged outwards by a fluid under pressure, characterized in that at least one of said deformable plates (2, 2') is fixed in a mobile manner to a support structure (6) for opening or closing the pressing device (1) around at least one shaped support (14; 27, 28; 30, 31) which is provided with transport means (12, 12', 13) to and from said pressing device (1) and is suitable for supporting said semimanufactured product during the pressing with at least one waterproofing sheath (18).

~~19.18.~~ Machine according to claim 178, characterized in that said pressing device (1) is provided with heating means for activating at least one layer of thermoactivable glue arranged between the semimanufactured product and the waterproofing sheath (18).

~~20.19.~~ Machine according to claim 178 or 189, characterized in that said shaped support (14; 27, 28; 30, 31) is provided with heating means for activating at least one layer of thermoactivable glue arranged between the semimanufactured product and the waterproofing sheath (18).

~~21.20.~~ Machine according to one of claims 178 to 1920, characterized in that one or both deformable plates (2, 2') are pivoted to the support structure (6) so as to rotate for opening or closing the pressing device (1).

~~22.21.~~ Machine according to one of claims 178 to 201, characterized in that the rotation axis of one or both deformable plates (2, 2') is substantially vertical.

~~23.22.~~ Machine according to one of claims 178 to 212, characterized in that both deformable plates (2, 2') rotate around a same axis.

~~24.23.~~ Machine according to one of claims 178 to 223, characterized in that a plurality of arms (7, 7') are fixed outside the deformable plates (2, 2') so that an arm (7') of a deformable plate (2') is arranged between two arms (7) of the other deformable

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plate (2).

25-24. Machine according to claim 234, characterized in that the end of the arms (7, 7') close to the support structure (6) is provided with a hole in which a pin (8), around which the deformable plates (2, 2') can rotate, is inserted.

5 26-25. Machine according to claim 234 or 245, characterized in that the end of the arms (7, 7') opposite to the support structure (6) is provided with a hole in which the piston of one or more cylinders (9), acting as bolts for locking the deformable plates (2, 2') when they are closed, can penetrate.

10 27-26. Machine according to one of claims 178 to 256, characterized in that the transport means (12, 12', 13) of the shaped support (14; 27, 28; 30, 31) comprise at least one rail (12) on which a carriage (13), on which is in turn mounted the shaped support (14; 27, 28; 30, 31), can run.

15 28-27. Machine according to claim 267, characterized in that said transport means (12, 12', 13) comprise two rails (12, 12') for alternately transporting two shaped supports (14; 27, 28; 30, 31) in the same position between the deformable plates (2, 2') of the pressing device (1).

29-28. Machine according to claim 278, characterized in that the two rails (12, 12') converge toward the pressing device (1).

20 30-29. Machine according to one of claims 178 to 289, characterized in that the shaped support (14; 27, 28) can be expanded before it is pressed in the pressing device (1).

31-30. Machine according to one of claims 178 to 2930, characterized in that the shaped support (14) comprises at least one mobile member (19) suitable for being pushed outwards by one or more cylinders arranged in the same support.

25 32-31. Machine according to claim 301, characterized in that the shaped support (14) is similar to a foot and the mobile member (19) is arranged in the position of the heel.

30 33-32. Machine according to claim 312, characterized in that the mobile member (19) is fixed in a removable manner to the shaped support (14) so as to substitute it with other mobile members having different sizes, so as to adapt the shaped support (14) to shoe uppers having different sizes.

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34.33. Machine according to one of claims 178 to 323, characterized in that the shaped support (27, 28) comprises a pair of shaped members (27, 28) which can run on a guide (26) according to the position of a wedge (29) which can slide between these shaped members (27, 28).

5 35.34. Machine according to claim 334, characterized in that the shapes of said shaped supports (27, 28) comprise the heel and the tip, respectively, of a foot.

36.35. Machine according to one of claims 178 to 289, characterized in that the shaped support (30, 31) comprises a first shaped member (30) on which a second shaped member (31) can be mounted, said second shaped member (31) being suitable
10 for being inserted into the semimanufactured product to be waterproofed before said mounting.

37.36. Machine according to claim 356, characterized in that the first and the second shaped support (30, 31) have a shape substantially equal to a hand portion including at least one finger.

15 38.37. Machine according to claim 367, characterized in that the first shaped support (30) includes middle, ring and little fingers and the second shaped support (30, 31) includes forefinger and thumb.

39.38. Machine according to one of claims 189 to 378, characterized in that said heating means comprise one or more inlet ducts (4) provided with valves for
20 introducing into the deformable plates (2, 2') compressed air heated by at least one heat exchanger (5), as well as at least one outlet duct (10, 10') provided with a valve for discharging this compressed air outside.

40.39. Machine according to one of claims 189 to 389, characterized in that said heating means comprise one or more one or more heating members (21) arranged inside
25 the deformable plates (2, 2') for heating the fluid contained therein by conduction and convection, as well as the pressing surfaces (3) by irradiation.

41.40. Machine according to one of claims 189 to 3940, characterized in that said heating means comprise one or more electric resistors arranged in the shaped member (14; 27, 28; 30, 31).

30 42.41. Machine according to one of claims 178 to 401, characterized in that the devices (9, 12, 12', 23, 23') for the movement of the mobile components (2, 2', 13, 19)

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of the machine itself are driven in a pneumatic manner.

43.42. Machine according to one of claims 178 to 412, characterized in that the pressing device (1) is closed laterally by a pair of containers (22, 22'), at the end by the support structure (6), and below by a platform (11) extending frontally, so as to prevent the accidental access to the pressing device (1).

44.43. Machine according to one of claims 178 to 423, characterized in that the outer surface of the shaped support (14; 27, 28; 30, 31) is provided with at least one elastic, antiadherent and heat-resistant coating.

45.44. Machine according to one of claims 178 to 434, characterized in that the outer surface of the shaped support (14; 27, 28; 30, 31) is shaped so as to adhere to the surfaces of the semimanufactured product which are turned toward the shaped support (14; 27, 28; 30, 31) during the pressing and to compensate their irregularities, if any.

46.45. Semimanufactured footwear, clothing item or accessory, characterized in that it is waterproofed by means of the machine according to one of claims 178 to 445.

47.46. Footwear upper, characterized in that it is waterproofed by means of the machine according to one of claims 178 to 445.

48.47. Shoe, characterized in that it comprises an upper according to claim 467.

49.48. Glove, characterized in that it is waterproofed by means of the machine according to one of claims 178 to 445.